CLAIMS

1. A method for screening a substance interfering in the association of DOCK2 and ELMO, comprising the steps of contacting DOCK2, ELMO and a test substance, and then estimating the level of formation of association of DOCK2 and ELMO.

2. A method for screening a substance interfering in the association of DOCK2 and ELMO, comprising the steps of contacting SH3 domain of DOCK2, ELMO and a test substance, and then estimating the level of formation of association of SH3 domain of DOCK2 and ELMO.

3. A method for screening a substance interfering in the association of DOCK2 and C terminus domain of ELMO, comprising the steps of contacting DOCK2, C terminus domain of ELMO and a test substance, and then estimating the level of formation of association of DOCK2 and C terminus domain of ELMO.

4. A method for screening a substance interfering in the association of DOCK2 and ELMO, comprising the steps of contacting SH3 domain of DOCK2, C terminus domain of ELMO and a test substance, and then estimating the level of formation of association of SH3 domain of DOCK2 and C terminus domain of ELMO.

5. The method for screening a substance interfering in the association of DOCK2 and ELMO according to any one of claims 1 to 4, wherein DOCK2 or its SH3 domain and/or ELMO or its C-terminus domain is bound with a marker protein and/or peptide

tag.

6. The method for screening a substance interfering in the association of DOCK2 and ELMO according to anyone of claims 1 to 5, wherein an antibody against ELMO or its C terminus domain is acted to DOCK2 or its SH3 domain fractionated by an antibody against DOCK2 or its SH3 domain, or an antibody against other peptides fused with DOCK2 or its SH3 domain, and the level of formation of association is estimated.

7. The method for screening a substance interfering in the association of DOCK2 and ELMO according to any one of claims 1 to 6, wherein the level of formation of association is estimated by detecting GTP-binding form of activated-Rac.

8. The method for screening a substance interfering in the association of DOCK2 and ELMO according to any one of claims 1 to 7, wherein the substance interfering in the association of DOCK2 and ELMO is a substance promoting or suppressing the function of regulating lymphocyte migration.

9. The method for screening a substance interfering in the association of DOCK2 and ELMO according to any one of claims 1 to 7, wherein the substance interfering in the association of DOCK2 and ELMO is a substance inhibiting the binding of DOCK2 and ELMO.

10. The method for screening a substance interfering in the association of DOCK2 and ELMO according to any one of claims 1 to 9, wherein ELMO is ELMO1.

11. A method for searching a therapeutic agent for immune related diseases such as allergy, autoimmune diseases, GvH, and graft rejection wherein the method for screening a substance interfering in the association of DOCK2 and ELMO according to any one of claims 1 to 10 is used.

12. A method for searching a therapeutic agent for diseases caused by the suppression of lymphocyte migration, which promotes cytoskeletal reorganization by activating Rac, wherein the method for screening a substance interfering in the association of DOCK2 and ELMO according to any one of claims 1 to 10 is used.

13. A method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor, comprising the steps of contacting ELMO, GDP/GTP exchange factor and a test substance, and then estimating the level of formation of association of ELMO and GDP/GTP exchange factor.

14. A method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor, comprising the steps of contacting N terminus domain of ELMO, GDP/GTP exchange factor and a test substance, and then estimating the level of formation of association of N terminus domain of ELMO and GDP/GTP exchange factor.

15. The method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor according to claim 13 or 14, wherein ELMO or its N terminus domain and/or

GDP/GTP exchange factor is fused with another peptide.

16. The method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor according to any one of claims 13 to 15, wherein an antibody against ELMO or its N terminus domain is acted to a GDP/GTP exchange factor fractionated by an antibody against GDP/GTP exchange factor or by an antibody against another peptide fused with GDP/GTP exchange factor, and the level of formation of association is estimated.

17. The method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor according to any one of claims 13 to 16, wherein the level of formation of association is estimated by detecting GTP-binding form of activated-Rac.

18. The method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor according to any one of claims 13 to 17, wherein the substance interfering in the association of ELMO and GDP/GTP exchange factor is a substance promoting or suppressing the function of regulating lymphocyte migration.

19. The method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor according to any one of claims 13 to 17, wherein the substance interfering in the association of ELMO and GDP/GTP exchange factor is a substance inhibiting the binding of ELMO and GDP/GTP exchange factor.

20. The method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor according to any one of claims 13 to 19, wherein ELMO is an ELMO bound with DOCK2.

21. The method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor according to any one of claims 13 to 20, wherein ELMO is ELMO1.

22. The method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor according to any one of claims 13 to 21, wherein the GDP/GTP exchange factor is a Rac-specific GDP/GTP exchange factor.

23. The method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor according to claim 22, wherein the Rac-specific GDP/GTP exchange factor is Tiam1.

24. A method for searching a therapeutic agent for immune related diseases such as allergy, autoimmune diseases, GvH, and graft rejection, wherein the method for screening a substance interfering in the association of ELMO and GDP/GTP exchange factor according to any one of claims 13 to 23 is used.

25. A method for searching a therapeutic agent for diseases caused by the suppression of lymphocyte migration, which promotes cytoskeletal reorganization by activating Rac, wherein the method for screening a substance interfering in the

association of ELMO and GDP/GTP exchange factor according to any one of claims 13 to 23 is used.

26. A method for screening a substance for promoting or suppressing Rac activation, comprising the steps of contacting DOCK2, ELMO, GDP/GTP exchange factor and a test substance, and then estimating the level of formation of association of DOCK2 and ELMO, or the level of formation of association of ELMO and GDP/GTP exchange factor.

27. A method for screening a substance for promoting or suppressing Rac activation, comprising the steps of contacting SH3 domain of DOCK2, ELMO, GDP/GTP exchange factor and a test substance and then estimating the level of formation of association of SH3 domain of DOCK2 and ELMO, or the level of formation of association of ELMO and GDP/GTP exchange factor.

28. The method for screening a substance for promoting or suppressing Rac activation according to claim 26 or 27, wherein the level of formation of association is estimated by detecting GTP-binding form of activated-Rac.

29. The method for screening a substance for promoting or suppressing Rac activation according to any one of claims 26 to 28, wherein ELMO is an ELMO bound with DOCK2.

30. The method for screening a substance for promoting or suppressing Rac activation according to any one of claims 26 to 29, wherein ELMO is ELMO1.

31. The method for screening a substance for promoting or suppressing Rac activation according to any one of claims 26 to 30, wherein the GDP/GTP exchange factor is a Rac-specific GDP/GTP exchange factor.

32. The method for screening a substance for promoting or suppressing Rac activation according to claim 31, wherein the Rac-specific GDP/GTP exchange factor is Tiam1.

33. A method for searching a substance for promoting or suppressing the function of regulating lymphocyte migration, wherein the method for screening a substance promoting or suppressing Rac activation according to any one of claims 26 to 32 is used.

34. A method for searching a therapeutic agent for immune related diseases such as allergy, autoimmune diseases, GvH, and graft rejection, wherein the method for screening a substance for promoting or suppressing Rac activation according to any one of claims 26 to 32 is used.

35. A method for searching a therapeutic agent for diseases caused by the suppression of lymphocyte migration, which promotes reconstruction of cytoskeleton by activating Rac, wherein the method for screening a substance for promoting or suppressing Rac activation according to any one of claims 26 to 32 is used.

36. A therapeutic agent for immune related diseases such as allergy, autoimmune diseases, GvH and graft rejection, obtained

by the searching method according to claim 11, 24 or 34.

37. A therapeutic agent for diseases caused by the suppression of lymphocyte migration, promoting cytoskeletal reorganization by activating Rac, obtained by the searching method according to claim 12, 25 or 35.

38. A method for screening a substance inhibiting DOCK2-function, by targeting N terminus domain of DOCK2 including SH3 domain, comprising the steps of contacting SH3 domain of DOCK2, the SH3 domain-binding protein and a test substance, and then estimating the level of formation of association of DOCK2 and SH3 domain-binding protein.

39. A method for screening a substance inhibiting DOCK2-function, by using a transgenic cell line expressing full-length DOCK2 and DOCK2-deleted mutants, comprising the steps of measuring and estimating the level of Rac activation in these cell lines, identifying the functional domain of DOCK2, searching a molecule associated with functional domain that associates with the functional domain, contacting the functional domain of DOCK2, the molecule associated with functional domain and a test substance, and estimating the level of formation of association of functional domain of DOCK2 and molecule associated with functional domain of DOCK2.